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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/705,587 11/03/00 Y. YU

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JANE MASSEY LICATA
LICATA & TYRELL PC
66 E MAIN STREET
MARLTON NJ 08053

EXAMINER

GHASHGHAE, F

ART UNIT

PAPER NUMBER

1656

DATE MAILED: 04/23/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/705,587

Applicant(s)

Y.YU ET AL.

Examiner

Fariba Ghashghaee

Art Unit

1656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 20) ☐ Other: ____

DETAILED ACTION***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 8, 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Tamsamani et al. (A Rapid Method for Quantitation of Oligonucleotide Phosphorothioates in Biological Fluids and Tissues, Analytical Biochemistry 215, pp.54-58, 1993).

Tamsamani et al. teaches a method for detecting or quantitating an oligonucleotide in a bodily fluid or extract, comprising the steps of : contacting said fluid or extract with a probe complementary to said oligonucleotide, wherein said probe includes a detectable moiety and placing said fluid or extract in contact with a solid support (Nylon Membrane) to which a binding partner of said binding moiety is attached and contacting said fluid or extract with a nuclease and detecting a label associated with said marker, wherein the presence of said label indicates the presence of said oligonucleotide bound to said solid support (See Abstract, Figure 3, and page 57, 2nd Paragraph).

Tamsamani also teaches that in the aforementioned method said oligonucleotide comprises at least one phosphorothioate linkage(See Abstract). Tamsamani cites the

use of digoxigenin as labelling compound (See page 56, last Paragraph) and furthermore explains the use of chemiluminescent label in his oligonucleotide detection method (See Page 55, last Paragraph).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamsamani et al. as applied to claims 1, 3, 8, 9 above, and further in view of Serres et al. (Hybridization Assay for the Determination of Phosphorotioate Antisense Oligonucleotide Plasma Concentrations in a Toxicokinetic Study, Analytical Biochemistry 233, 228-233, 1996).

Serres et al. teaches a method of detecting or quantitating oligonucleotide in a bodily fluid or extract, wherein said bodily fluid is plasma (See Abstract and page 231).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to combine the oligonucleotide detection method of Temsamani et al. with the Serres et al. method for detection of oligonucleotide in plasma to make the claimed method.

The person of ordinary skill in the art would have been motivated to make this oligonucleotide detection method and would have been expected a reasonable level of success because it was suggested by Temsamani that the sensitivity of detection by his method will be useful to monitor the pharmacokinetics of oligonucleotides in bodily fluids and distribution in various tissues (See Abstract).

Claim Rejections - 35 USC § 103

Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Temsamani et al. as applied to claims 1-3, 8 and 9 above, and further in view of Lind et al. (Structural Characterization of 2' -O-(2-methoxyethyl)-modified nucleic acids from molecular dynamics simulations, Vol. 26, No. 16 pp.3694-3699, 1998) and Prosnjak et al. ("Substitution of 2-Aminoadenine and 5-Methylcytosine for Adenine and Cytosine in Hybridization Probes Increase the Sensitivity of DNA Fingerprinting", Genomics 21, 490-494, 1994).

Lind et al. teaches the structure and physical properties of oligonucleotides modified at the 2' position with at least one sugar moiety and also teaches modified oligonucleotides wherein said 2' modification is a 2'-o-methoxyethyl modification (See Figures 1, 2, and 4 and pages 3698-99).

Prosnyak et al. teaches a method for oligonucleotide detection wherein said oligonucleotide comprises at least one modified base and also includes a method wherein said modified base is 5-methylcytosine (See page 492-493, especially Discussion section).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to combine the oligonucleotide detection method of Temsamani et al. with the Lind et al. method for modification of oligonucleotide with at least one sugar moiety at 2' position and Prosnyak modified base wherein said modified base is 5-methylcytosine. It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to combine the oligonucleotide detection method of Temsamani et al. with the Lind et al. method for modification of oligonucleotide with at least one sugar moiety at 2' position and Prosnyak modified base wherein said modified base is 5-methylcytosine to make the claimed method.

The person of ordinary skill in the art would have been motivated to make this oligonucleotide detection method and would have been expected a reasonable level of success because it was suggested by Temsamani that this method can be applied to a variety of oligonucleotide analogs (See page 57, 2nd Paragraph).

Claim Rejections - 35 USC § 103

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Temsamani as applied to claims 1-9 above, and further in view of Lundin et al. (“

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S₁ nuclease hybrid analysis of mitochondrial DNA amplified by PCR: rapid screening for small-scale rearrangements", Nucleic Acid Research, 25(12): 2535, 1997).

Lundin et al. teaches a method for detection of oligonucleotide wherein said single-strand specific nuclease is S1 nuclease (See Abstract, Figures 1-2, and page 2537, last Paragraph).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to combine Tamsamani oligonucleotide detection method with Lundin S1 nuclease to make the claimed invention.

The person of ordinary skill in the art would have been motivated to make this method and would have been expected a reasonable level of success because all nucleosides have the same enzymatic functionality.

No claim is allowable.

Advisory Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fariba Ghashghaee whose telephone number is (703)305-3586. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on (703)308-1152. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3014 for regular communications and (703)305-3014 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0196.



April 22, 2001

Fariba Ghashghaee
Examiner
Art Unit 1656



W. Gary Jones
Supervisory Patent Examiner
Technology Center 1600

4/23/01